

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

5 Claims 1-22 (canceled)

1 23. (Currently Amended) An integrated circuit structure formed at the surface of  
2 a substrate, comprising:

3 a plurality of shallow trenches formed in the surface of the substrate;

4 a nitrogen doped insulating liner grown on sidewalls of the shallow trenches  
5 by treating said sidewalls with an oxygen rich atmosphere followed with  
6 treating said sidewalls with a nitrogen compound;

7 a gap filling insulating material filling the shallow trenches level with the  
8 surface of the substrate ~~said gap filling insulating material being high~~  
9 ~~temperature annealed to cause said gap filling insulating material to~~  
10 ~~become more dense; and~~

11 a plurality transistors formed in the surface of the substrate in regions  
12 between said shallow trenches, wherein each of said transistors include  
13 a source and a drain formed by diffusing an impurity species into the

14 surface of said substrate, wherein said nitrogen doped insulating liner  
15 acts as a stop to prevent said impurity species from diffusing into said  
16 substrate from said gap filling insulating material.

1 24. (Previously Presented) The integrated circuit structure of claim 23 wherein  
2 said nitrogen compound is selected from the group of nitrogen compounds  
3 consisting of nitrogen ( $N_2$ ) gas, ammonia ( $NH_3$ ), nitric oxide (NO), and  
4 nitrous oxide ( $N_2O$ ).

1 25. (Previously Presented) The integrated circuit structure of claim 23 wherein  
2 the oxygen rich atmosphere is selected from the atmospheres consisting of  
3 steam and oxygen gas.

1 26. (Previously Presented) The integrated circuit structure of claim 23 wherein  
2 the treating of the sidewalls of the shallow trenches with the oxygen rich  
3 atmosphere of the shallow trenches is at a temperature from  
4 approximately 900° C to approximately 1000° C, at a pressure of from  
5 approximately 600 Torr to approximately 760 Torr, for a period of time  
6 from 60 minutes to 120 minutes.

1 27. (Previously Presented) The integrated circuit structure of claim 26 wherein  
2 the treating the internal surfaces of the shallow trenches with the nitrogen  
3 compounds is at a temperature of from approximately 900 °C to  
4 approximately 1000 °C at a pressure of from approximately 600 Torr to

5 approximately 760 Torr for a period of time of from approximately 30  
6 minutes to approximately 90 minutes.

1 28. (Previously Presented) The integrated circuit structure of claim 24 wherein  
2 the nitrogen doped insulating liner is formed by exposing the sidewalls of  
3 said shallow trenches to a nitrogen rich and oxygen rich atmosphere  
4 thermally to grow a silicon oxynitride layer on said sidewalls.

1 29. (Previously Presented) The integrated circuit structure of claim 28 wherein  
2 the nitrogen rich and oxygen rich atmosphere is at a temperature of from  
3 approximately 900 °C to approximately 1000 °C, and at a pressure of from  
4 approximately 600 Torr to approximately 760 Torr for a period of from  
5 approximately 120 minutes to approximately 180 minutes.

1 30. (Previously Presented) The integrated circuit structure of claim 28 wherein  
2 the nitrogen rich and oxygen rich atmosphere includes nitrogen  
3 compounds selected from the set of nitrogen compounds consisting of  
4 nitrogen (N<sub>2</sub>) gas, ammonia (NH<sub>3</sub>), nitric oxide (NO), and nitrous oxide  
5 (N<sub>2</sub>O) and oxygen rich compounds selected from the set of oxygen rich  
6 compounds consisting of steam (H<sub>2</sub>O) and oxygen (O<sub>2</sub>).

1 31. (Previously Presented) The integrated circuit structure of claim 23 wherein  
2 the nitrogen doped insulating liner has a thickness of from approximately  
3 10 nanometers to approximately 30 nanometers.

- 1 32. (Previously Presented) The integrated circuit structure of claim 23 wherein  
2 the gap fill insulating material is selected from insulating materials  
3 consisting of CVD formed silicon oxide and spun-on-glass silicon dioxide.
- 1 33. (Previously Presented) The integrated circuit structure of claim 23 wherein  
2 the impurity species is boron.
- 1 34. (New) The integrated circuit structure of claim 23 wherein said gap filling  
2 insulating material is high temperature annealed to cause said gap filling  
3 insulating material to become more dense.